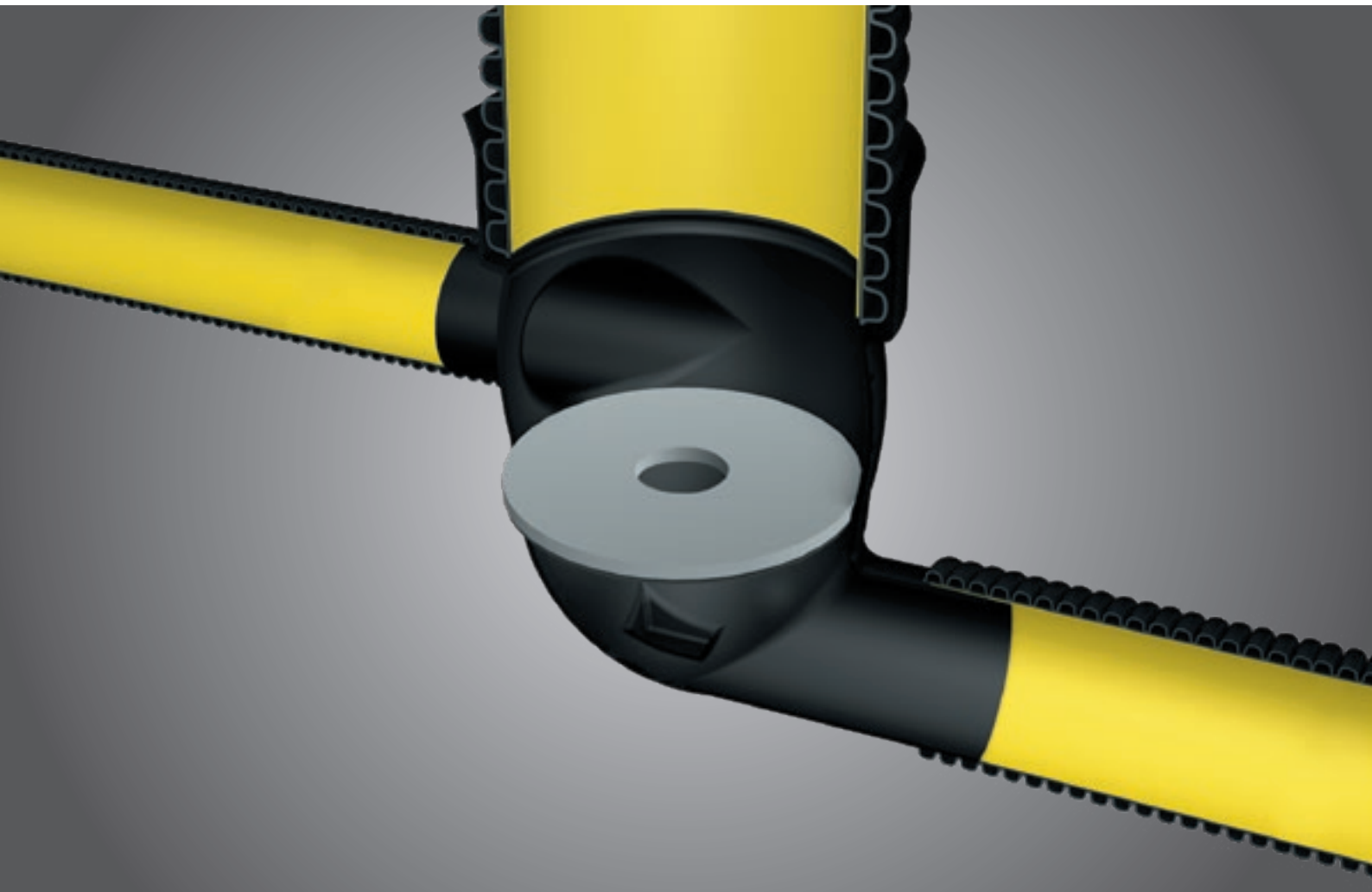


Product brochure

Rigo® Limit V



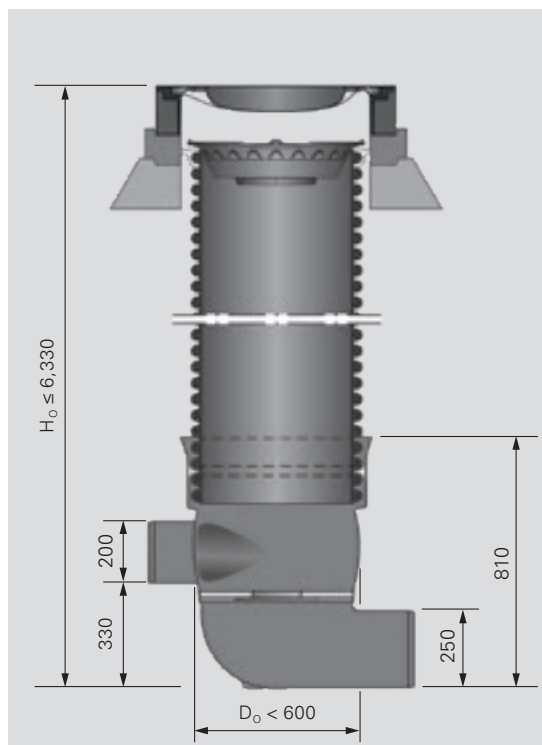
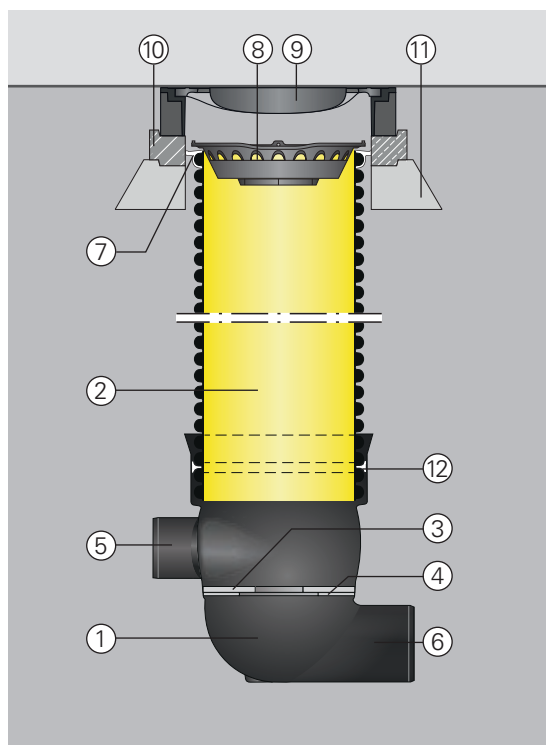
Vortex throttle shaft with exchangeable orifice

Stormwater discharge control using vortex technology ...

Rigo®Limit V – flexible and compatible

For a controlled discharge of stormwater from infiltration swales, ground basins and other structures for the retention of stormwater, plastic shafts using vortex valve technology, also known as throttle shafts, have become established. Stormwater is collected and stored, e.g., in storage/infiltration systems or ground basins. It is then discharged with a delay but continuously so that it does no harm. Throttle shafts ensure a controlled discharge and therefore reduce discharge peaks. Shafts using vortex technology guarantee the discharge of retention systems within the shortest amount of time and with the highest operational safety as compared to traditional systems. RigoLimit V has been designed specifically for the hydraulic and constructional requirements in the field of stormwater retention. Its operating principle is a consistent further development of the proven vortex throttle technology. Its interior boasts functional craftiness and renders moving parts redundant: the shaft itself is the vortex body!

Structure



- ① RigoLimit V shaft bottom
- ② Extension pipe and sealing ring
- ③ Exchangeable orifice, removable
- ④ Bearing ring to support the orifice
- ⑤ Inlet DN 200 KG spigot
- ⑥ Outlet DN 250 KG spigot
- ⑦ DOM sealing ring (optional accessory)
- ⑧ Sediment trap, large (optional accessory)
- ⑨ Shaft cover with ventilation openings CW 610 (to be supplied on site)
- ⑩ Concrete support ring h = 100 mm (to be supplied on site)
- ⑪ Bearing free from stationary loads (to be supplied on site)
- ⑫ Profile sealing ring (included in delivery)

... for increased safety and reliability

The shaft as a vortex body

RigoLimit V is the first plastic throttle shaft to generate the proven vortex flow in the shaft. The shaft and the throttle form a unit; built-in throttle elements are no longer needed.

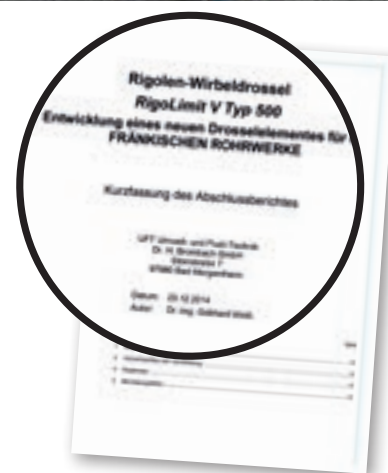
The shaft boasts a straightforward and robust design. The innovative interior allows discharge quantities to be adapted to perfectly meet local requirements. With this state-of-the-art technology, RigoLimit V achieves uninterrupted operation with maximum flexibility. By changing the exchangeable orifice, the discharge quantity can be adjusted at any time.

The throttle characteristics of RigoLimit V have been defined by specialists from the **UFT Umwelt- und Fluid-Technik Dr. H. Brombach GmbH**.

The throttle shaft is manufactured to meet project-specific needs and delivered ready-to-connect. It can easily be integrated into the complete system or the drainage system on site.

Adapting the throttle outlet rate is easily possible by exchanging the orifice.

The throttle outlet range depends on the head and ranges from 0.5 l/s to 80 l/s.



Please observe the installation manual  www.fraenkische.com

Rigo[®]Limit V – clear advantages

System advantages of the vortex technology

- Large cross-sectional outlet opening – no risk of blockages
- Self-cleaning thanks to vortex effect
- High discharge performance across all operating conditions
- Discharge within the shortest amount of time
- Almost constant discharge
- Self-activating and solely hydraulically controlled – no external power supply
- No moveable parts – no wear and tear

Easy installation

- Dimensioned and pre-assembled by FRÄNKISCHE
- Delivered ready-to-be-connected
- Easy integration into the drainage system
- Particularly easy to install as compared to reinforced concrete shafts
- Orifice can be removed and re-inserted.

Operational requirements are fulfilled without requiring access to the shaft

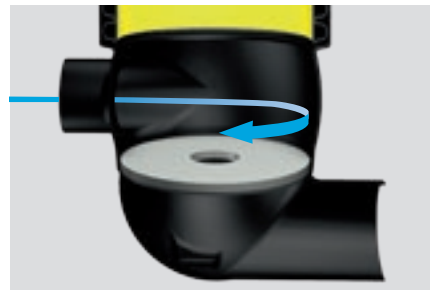
- High operating reliability thanks to large orifice opening (no risk of blockages)
- Fully revisable thanks to the exchangeable orifice
- Pressure cleaning possible
- Easy visual inspection during operation
- Easy adjustment to changed discharge conditions thanks to the exchangeable orifice
- Corrosion-free design, therefore very reliable and maintenance-free

Controlled discharge: ground basins, storage/infiltration systems and underdrained swale systems

Optimum flow rate

The stormwater discharged from the storage system flows through the inlet pipe into the throttle shaft. The water enters the shaft body tangentially.

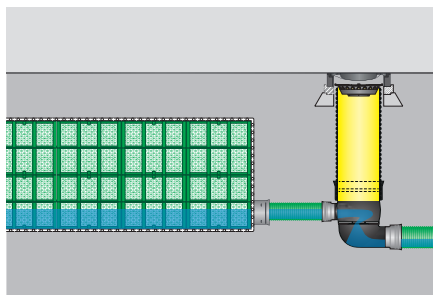
When large amounts of water enter the system, this provides the precondition for the generation of a self-regulating vortex flow.



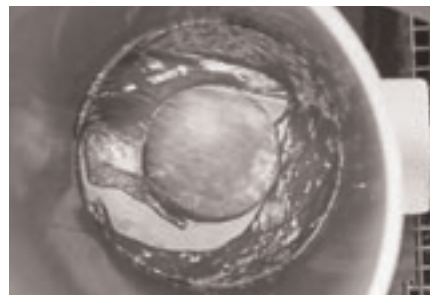
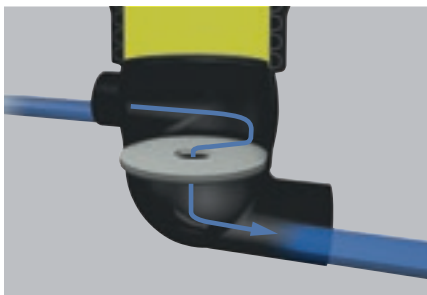
Discharge states

A: Uncontrolled discharge (low water level)

In case of a low water level in the upstream storage system, the water is directly discharged in an uncontrolled manner through the large cross-sectional outlet opening of the orifice. The large orifice diameter always ensures maximum operational reliability (no blockages).



Uncontrolled discharge in case of a low water level



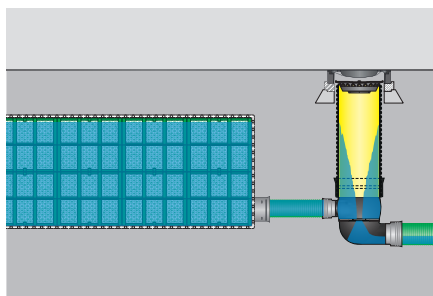
B: Controlled discharge (high water level)

When water fills the basin, it has more energy in the tangential inlet to RigoLimit V. This creates a vortex flow with an air-filled vortex core which blocks the largest part of the orifice opening in the bottom of the vortex chamber. This constricts the large orifice cross-section which is desired for more operational reliability for throttling. At the same time, the strong vortex results in a self-cleaning effect when there is the risk of blockages, since dirt is simply dragged along.

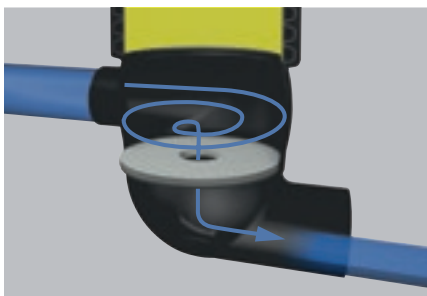
In addition, due to the centrifugal force of the rotating water, counter pressure is generated along the vortex chamber wall, which limits the inflow. Below the outlet orifice, the water flushes as a water jet into the water in the shaft. Also in this case, there is a self-cleaning effect which helps flushing dirt.



Vortex in the shaft



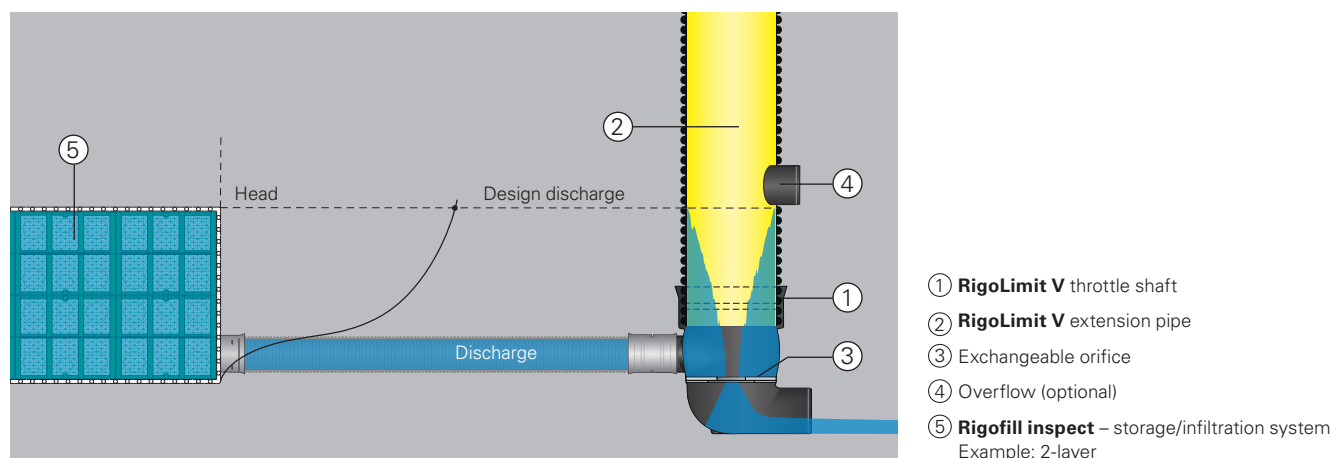
Controlled discharge in case of a high water level



Discharge from the exchangeable orifice

The vortex throttle technology

Discharge graph



Discharge range

The throttle outlet range depends on the head and ranges from 0.5 l/s to 80 l/s.
Please refer to the order form for max. installation depths and heads, as well as for data on product geometry.

Vortex chamber height

The vortex height in RigoLimit V depends on the water level in the upstream basin.
Optionally, an overflow into RigoLimit V can be installed at the level of the rated water level.

Vortex technology replaces circular aperture

Comparison with the opening of a circular aperture: With its hydraulic resistance, the vortex principle ensures a cross-sectional discharge which is larger than a traditional circular aperture by a factor of up to 2.5 (maximum operational reliability).

Changing the orifice and dimensioning

If, in case of changes in the collection area, the size of the swale or the stormwater retention systems and thus the amount of water being discharged changes as well, the throttle outlet can be adjusted by changing the orifice.

Dimensioning the new orifice diameter is performed by FRÄNKISCHE.
Please use our order form in this case.

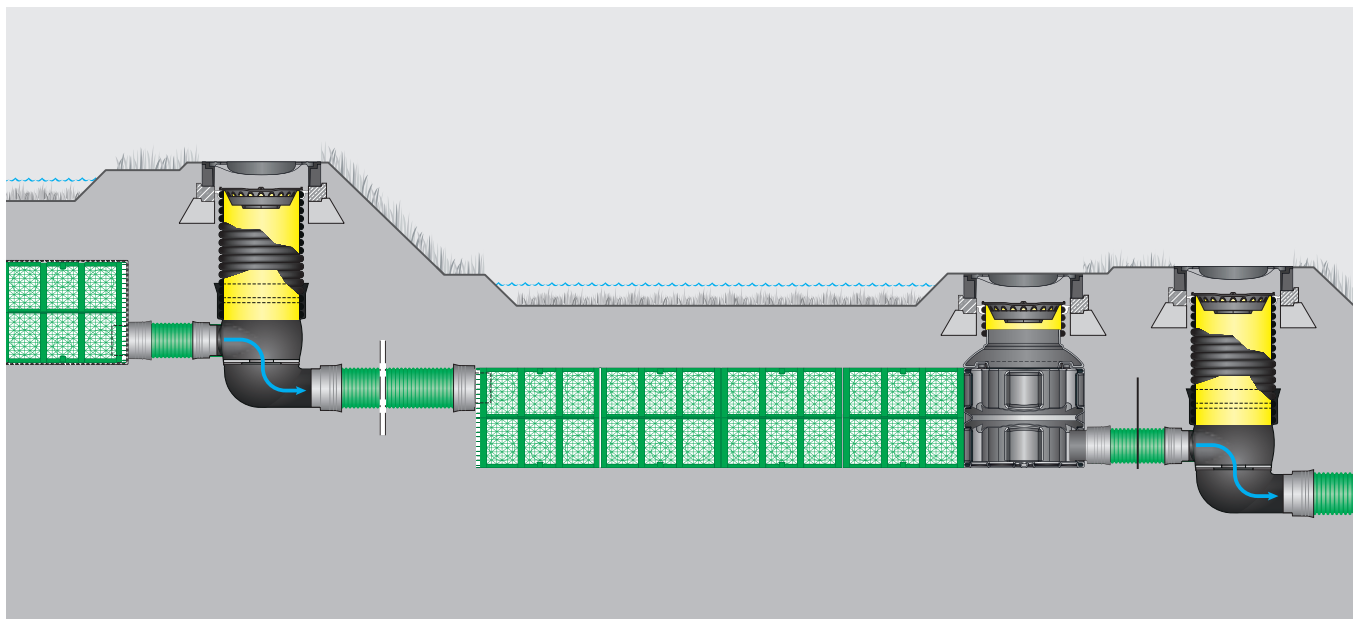
 www.fraenkische.com



Exchanging the orifice

The RigoLimit V throttle shaft is used when a retarded, time-lagged discharge into receiving waters is sought for stormwater retention. With the help of this shaft, the flow rate is reduced and controlled, and impulsive loads are avoided when water is discharged into sewer networks, wastewater treatment systems and waterbodies.

Application examples



A cross-sectional diagram of a pump-out station installed in a concrete pier. The station consists of a pump unit with a yellow internal component, a black flexible hose, and a blue rigid discharge pipe. The pipe has a green section with a serrated edge. Water is shown flowing from the pier into the discharge pipe and out into the water.

Ground basin

Product overview



Throttle shaft for stormwater retention systems

Plastic shaft D_o 600, extension pipe with black outside and yellow inside for optimum inspectability. Inlet diameter DN 200 KG. Outlet diameter DN 250 KG. Throttle outlet range ranging from 0.5 l/s to 80 l/s depending on the head.

Application: Throttle shaft for Rigofill inspect, SickuPipe, MuriPipe stormwater retention systems or ground basins. Ideal for systems that must achieve high operating reliability and high discharge performance across all operating stages.

| Product | Technical data | Cat. no. |
|---|---|----------|
| RigoLimit V throttle shaft incl. profile sealing ring, exchangeable orifice | D _o 600; Use order form 📄 www.fraenkische.com | 51240610 |
| Extension pipe ¹⁾ | D _o 600; 1 m length | 51550551 |
| | D _o 600; 2 m length | 51550552 |
| | D _o 600; 3 m length | 51550553 |
| | D _o 600; 6 m length | 51550556 |
| Extension pipe ¹⁾ with connection as emergency overflow; project-specific (max. DN 315 KG) | D _o 600; Use order form 📄 www.fraenkische.com | 51550529 |
| Coupling | for extension pipe D _o 600 | 51910500 |
| Profile sealing ring | for extension pipe D _o 600 | 51919501 |
| DOM sealing ring | for extension pipe D _o 600; as a seal between concrete support ring and extension pipe | 51919505 |
| Sediment trap D _o 600 | Suitable for installation under covers CW 610 | 51991095 |
| Shaft covers acc. to DIN EN 124 | Class B or D; CW 610 with ventilation openings | – |
| Support ring acc. to DIN 4034, Part 1 | 100 mm high D _i = 625 mm | – |

¹⁾ Pre-mounted temporary construction site cover included.

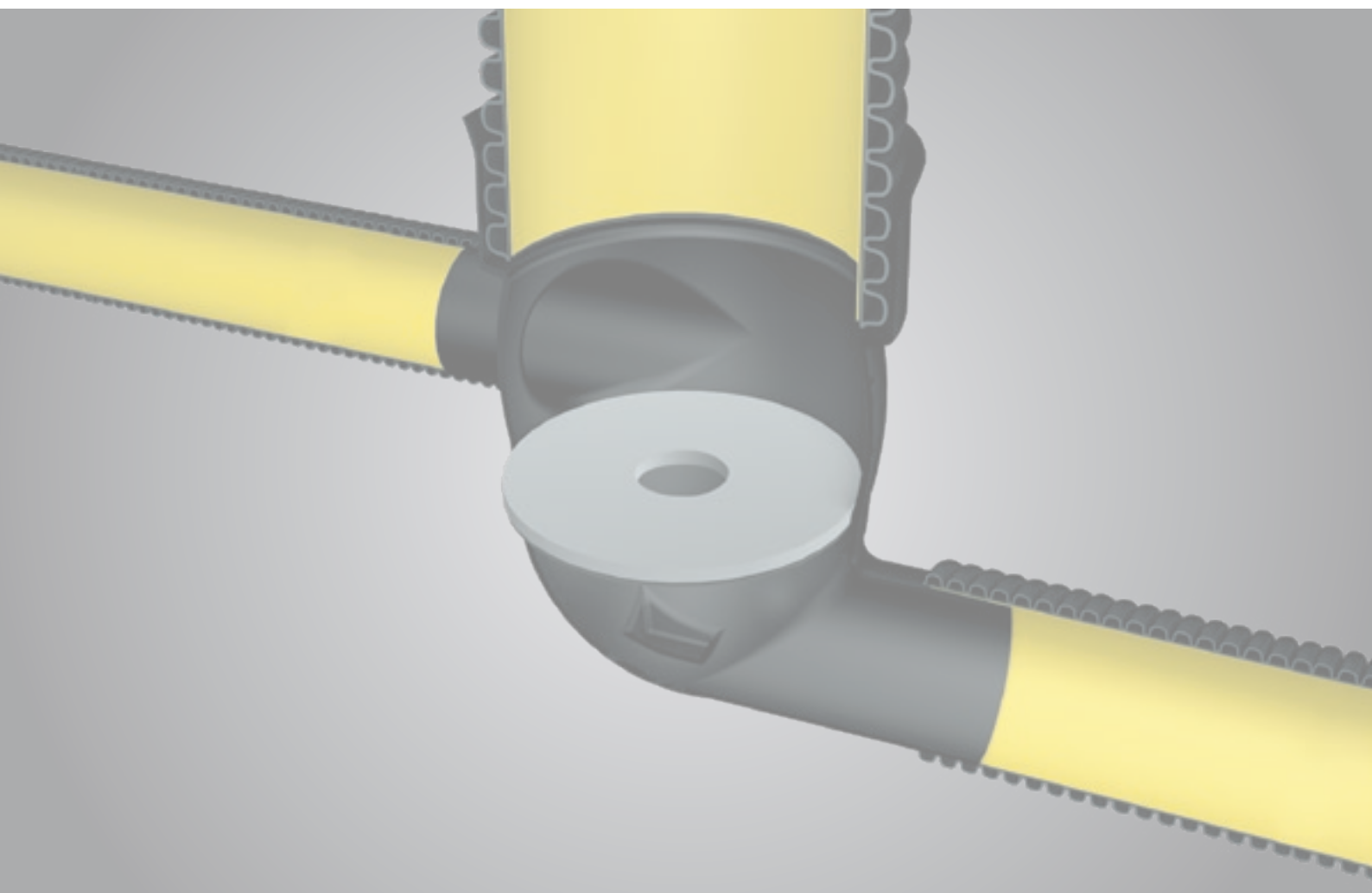
NB

To place a precise order, please use the RigoLimit V order form. 📄 www.fraenkische.com

Rigo[®] Limit V accessories



| Product | Technical data | Cat. no. |
|--|--|----------|
| Exchangeable orifice for subsequent adjustment of the discharge | Use order form 📄 www.fraenkische.com | 51791600 |
| Tool for (subsequent) lifting and inserting the exchangeable orifice | D _o = 16 mm; Scope of delivery: attachment piece (L = 480 mm) + extension rods (L = 4 x 1.5 m) | 51791610 |



FRÄNKISCHE

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